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BEFORE THE

PUBLIC SERVICE COMMISSION

OF MARYLAND

IN THE MATTER OF THE INVESTIGATION BY THE COMMISSION ON ITS OWN MOTION INTO LEGAL AND POLICY MATTERS RELEVANT TO THE REGULATION OF FIRMS, INCLUDING CURRENT TELECOMMUNICATIONS PROVIDERS AND CABLE TELEVISION FIRMS, WHICH MAY PROVIDE LOCAL EXCHANGE AND EXCHANGE ACCESS SERVICES IN MARYLAND IN THE FUTURE.	)	**CASE NO. 8587**

DIRECT TESTIMONY

OF

EDWARD J. REISNER

ON BEHALF OF

SBC MEDIA VENTURES, INC.

JUNE 10, 1994

Q. PLEASE STATE YOUR NAME, EMPLOYER, TITLE AND BUSINESS ADDRESS.

A. My name is Edward J. Reisner. I am employed by SBC Media Ventures, Inc. (SBC-MV) as Vice President - New Services Development. My office is located at 20 West Gude Drive in Rockville, Maryland.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

A. I am responsible for the implementation of telephony and new video services in Montgomery County for SBC-MV. This includes, but is not limited to, the engineering and construction of the fiber network facilities, selection of vendors, operational support systems, telephony switching, interconnection, marketing, staffing and training.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I have a Bachelor of Science - Electrical Engineering degree from Texas A & I University in Kingsville, Texas. I have attended the advanced management classes at Northwestern University and Brookings Institute.

I have also completed training conducted by the Bell System, AT&T, Northern Telecom and Southwestern Bell Telephone Company on switching systems, transmission systems, local distribution systems and operational support systems. I am a registered Professional Engineer in the state of Texas.

Q. DESCRIBE YOUR WORK EXPERIENCE WITH SOUTHWESTERN BELL CORPORATION.

A. I was employed by Southwestern Bell Telephone Company in 1974 as a Wire Chief in Marlin, Texas. I held various jobs in the Plant Department and Network Maintenance in the south Texas, San Antonio and Dallas areas until November, 1984, when I was given the responsibility for Dallas Central Network Maintenance. This responsibility included the oversight of the Ross Avenue Conversion. The Ross Avenue Conversion was the largest switching machine at that time to be cut into service. It consisted of 61 switching modules, over 45,000 access lines, over 50,000 private lines and requiring 11 inter-exchange carriers' facilities to be moved.

In May, 1988, I was transferred to St. Louis and worked in the Revenue Requirement and State Regulatory Department for two years. In July, 1990, I was named Executive Director - Technology Program Management at Southwestern Bell Technology Resources, Inc., the research and development subsidiary for Southwestern Bell Corporation. I assumed my current duties as Vice President - New Services Development in Rockville, Maryland in March, 1994.

Q. PLEASE EXPLAIN THE PURPOSE OF YOUR TESTIMONY.

A. My testimony provides the technical aspects that support SBC-MV's vision to provide local exchange service and network access services in Montgomery County. This testimony provides SBC-MV's plans to build a highly reliable, state-of-the-art, broadband, interactive, multimedia network in Montgomery County. This testimony goes beyond "vision". SBC-MV plans to bring enhanced and expanded video services, competitive local exchange services and access services to consumers.

Q. EXPLAIN THE TYPE OF NETWORK YOU PLAN TO BUILD TO PROVIDE TELEPHONE AND NEW VIDEO SERVICES.

A. We plan to build a highly reliable, state-of-the-art Hybrid Fiber Coax (HFC) network. Fiber optic cable will transport telephony and video signals from a central office to a fiber hub. The central office will contain the necessary switching equipment for telephony services. It will also contain the equipment that receives video signals from satellites and other sources and retransmit them over the network. That equipment is often referred to as the headend.

The fiber hub acts as a distribution point in the network. Each fiber hub will distribute telephony and video signals over fiber optic cable to a fiber node. The fiber node is the point in the network where the telephony and video signals are taken off the fiber optic

cable and put on coax cable, hence the name Hybrid Fiber Coax. The coax cable transports the signals to the home. Each fiber hub will serve between 10 and 20 fiber nodes. Each node will in turn serve an average of 500 homes.

In all, SBC-MV will have installed approximately 40 fiber hubs and 650 fiber nodes when the network is complete. The number of homes served per node or number of nodes per hub will depend on the density, or homes per mile, of the area being served by the node and hub. A full-featured digital switching system will interconnect SBC-MV's customers to other providers of telephone service. The latest in headend technology will be deployed to receive and distribute new and exciting video services. When complete, the network will consist of the most advanced technology available.

Q. WILL THE SIZING OF THE NODE AFFECT QUALITY OF SERVICE?

A. No, the sizing of the node will not affect the quality of service. The sizing of the node will depend on the density, or homes per mile, served by the node. Due to the technical characteristics of coax cable, the length of the coax cable from the fiber node to the home will be less than one mile in order to maintain high quality, highly reliable services.

Therefore, in rural areas of the county where distances between homes are greater, there may be only 350 homes per node. In high density areas, there may be as high as 750 homes per node.

Q. HOW MANY MILES OF FIBER/COAX DO YOU HAVE INSTALLED NOW?

A. There are 26 miles of fiber and 3400 miles of coax currently deployed in the network.

Q. HOW MANY MILES OF FIBER/COAX WILL YOU HAVE INSTALLED WITH THE NEW NETWORK?

A. The new network will contain approximately 2000 miles of fiber and 2000 miles of coax.

Q. WHY IS THERE AN OVERALL INCREASE IN MILES OF CABLE WITH THE NEW NETWORK?

A. The overall increase in the number of miles of cable plant is due to two factors. First, in order to provide universal residential service, SBC-MV will be building the new network to areas of Montgomery county that are not currently served by the existing network. This is mainly in rural areas where it was not cost effective to build the cable TV network.

Second, fiber optic cable will be used to eliminate microwave radio links in the current network to increase reliability and overall quality.

Q. HOW WILL CUSTOMERS OF SBC-MV COMPLETE CALLS OUTSIDE SBC-MV's NETWORK?

A. SBC-MV's customers will be able to complete calls to customers outside our network and within the Local Access Transport Area (LATA) in much the same way customers of independent telephone companies and cellular telephone companies complete calls today. SBC-MV will establish the necessary trunking arrangements to enable completion of calls to the other networks.

Initially, all calls outside our network will be completed through an interconnection with Bell Atlantic. As our customer base grows and our telephone traffic increases, it is anticipated that additional interconnections will be made with other networks such as those of Interexchange Carriers and Radio Common Carriers.

Q. WHAT IMPACT WILL THIS NEW NETWORK HAVE ON THE EXISTING CABLE TELEVISION SERVICES?

A. Montgomery County residents will continue to receive high quality cable service during this transition to the new network. Once the network is in place, cable service will be

greatly enhanced, not only in terms of programming choices and expanded channels but also in improved quality and reliability.

Q. HOW MUCH DOES SBC-MV PLAN TO INVEST IN THE NETWORK?

A. SBC-MV plans to invest approximately 130 million dollars over the next five years.

Q. HOW LONG WILL IT TAKE TO BUILD THIS NEW NETWORK?

A. It will take five years to fully build the network. Areas will be "turned on" for new video and telephony services as they are built. The first areas should be in service in the third quarter of 1995.

Q. WHAT PROCESS WILL YOU USE TO SELECT VENDORS?

A. Vendors will be selected through a formal Request for Proposal (RFP) process. Only qualified vendors with a known, good track record for technology and support will be invited to respond to the RFP. New technology components of the Hybrid Fiber Coax System will be tested at Southwestern Bell Technology Resources. Vendors will be evaluated and chosen based on many factors including, but not limited to, competency, reliability, warranty, upgradeability, service, price and installation intervals.

Q. **WILL YOU INSTALL YOUR OWN SWITCHING OFFICE?**

A. We plan to provide telephony services from our own state-of-the-art digital switch. However, utilization of third party spare switching capacity is being evaluated in order to satisfy short term requirements.

Q. **WILL YOU PROVIDE EMERGENCY BACKUP POWER?**

A. Absolutely. Each fiber node will contain backup batteries for a minimum of four hours of operation. The nodes will be equipped so emergency generators can be quickly coupled into the node for longer backup power. Each node will also be equipped to provide alarm status on the node's power system. Our network operations center will be aware of power conditions at each node in the network and can dispatch a technician to install portable emergency generators as required.

Q. **HOW DO YOU PLAN TO PERFORM TESTING AND ISOLATION OF TROUBLE ON THE TELEPHONE NETWORK?**

A. The network will be capable of testing and automatically diagnosing itself twenty-four hours a day, seven days a week. In many cases, service affecting trouble will be isolated and corrected without human intervention in a matter of seconds. If the network is unable to correct the trouble, then the trouble condition will be reported to the network operations center which in turn takes the necessary corrective action. In cases where the

network is unable to detect a trouble condition and a customer reports a problem, technicians will be dispatched to isolate and correct trouble.

Q. WILL YOUR CUSTOMERS HAVE EQUAL ACCESS?

A. Yes, we will provide equal access to interexchange long distance carriers.

Q. HOW WILL YOU HANDLE 911 EMERGENCY CALLS?

A. The RFP for the switch will specify that it must be capable of operating as a 911 tandem. In order to operate as a 911 tandem, a switch must have specialized software which routes calls placed to 911 to the proper Public Service Answering Position (PSAP). Our switch will be capable of interfacing with each PSAP within Montgomery county. If any PSAP in Montgomery county is unable to directly connect to our switch, we will route 911 calls to that PSAP through the Bell Atlantic 911 tandem switch.

Q. WHAT HOURS OF COVERAGE DO YOU PLAN TO HAVE FOR THE NETWORK OPERATIONS CENTER?

A. The center will be staffed twenty-four hours a day, seven days a week.

Q. HOW WILL YOU HANDLE DISPATCH FOR BOTH INSTALLATION AND REPAIR?

A. We plan to integrate our cable TV with telephony dispatch for both installation and repair. The customer service operations support system described earlier will also control these functions.

Q. WILL YOU UTILIZE THE SAME TECHNICIANS FOR CABLE TV AND TELEPHONE?

A. It is our plan to utilize the same technicians for basic installation and repair of both video services and telephony services. Some jobs, requiring highly specialized training, such as central office, headend and fiber systems maintenance may be separated.

Q. WHAT KIND OF TELEPHONE EXPERTISE WILL BE REQUIRED AND HOW WILL YOU PROVIDE IT?

A. We will require expertise in telephone switching, outside plant, installation and repair, engineering, testing, service centers and marketing. We have placed people experienced in providing telephone service into critical planning positions and will selectively add additional expertise as we see the need. We have plans to introduce a retraining program for the existing work force at SBC-MV. We will also recruit additional employees locally and provide training for them.

Q. WHAT TYPE OF TRAINING WILL YOUR EMPLOYEES NEED AND HOW WILL THEY OBTAIN IT?

A. The employees who work in customer contact jobs will require training to prepare service orders to establish, change or disconnect telephone service. These Customer Service Representatives (CSRs) will receive detailed training at the SBC-MV facilities in Rockville, Maryland during the months preceding telephony service offerings. These employees will also receive ongoing training following the implementation of telephony service. Employees who will establish and maintain outside facilities for the dual video and telephony services will require detailed, technical training prior to construction. This training will be provided by SBC-MV personnel along with the equipment vendor's personnel. SBC-MV may also use qualified consultants to the industry to satisfy training requirements.

The employees responsible for the daily operation and maintenance of the switching components of the network will require extensive training. This training will include many weeks of instruction at the vendor's training facility followed by on-site training during the installation interval.

Q. HOW WILL THE QUALITY OF SBC-MV's SERVICES COMPARE TO THE SERVICES OF OTHER TELEPHONE COMPANIES?

A. The SBC-MV network will contain highly reliable, state-of-the-art equipment. The network will be designed to meet or exceed all regulatory and industry standards as well as vendor recommendations for quality of service. In addition, customers buying telephone service simply will not accept poor quality service. Southwestern Bell Telephone Company has 100 years experience providing quality telephone service and SBC-MV will carry on that tradition by meeting or exceeding our competitor's quality of service to attract and retain customers.

Q. WHAT TYPE OF TELEPHONY SERVICES WILL BE PROVIDED OVER THE NEW NETWORK?

A. Local exchange service and network access telephone services that will initially be provided include basic dial tone, touch tone, custom calling and call control and management services such as Caller-ID. It will also include voice mail, 1+ IntraLATA toll and line maintenance services. Finally, SBC-MV customers will have access to operator services, directory assistance and listings in telephone directories.

BELL ATLANTIC - MARYLAND, INC.

REBUTTAL TESTIMONY OF DONALD E. ALBERT

CASE NO. 8659

OCTOBER 26, 1994

MARYLAND PUBLIC SERVICE COMMISSION

CASE NO. 8659

REBUTTAL TESTIMONY OF DONALD E. ALBERT

OCTOBER 26, 1994

I. Background and Summary

Q1. WHAT IS YOUR NAME, POSITION, AND BUSINESS ADDRESS?

A1. My name is Donald E. Albert. I am Director of Integrated Deployment Planning for Bell Atlantic Maryland, Washington, West Virginia and Virginia. My business addresses are 1 East Pratt Street, Baltimore, Maryland and 600 East Main Street, Richmond, Virginia.

Q2. WHAT IS YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE IN THE TELECOMMUNICATIONS INDUSTRY?

A2. In 1977 I received a Bachelor of Science degree in Engineering from Virginia Tech, in Blacksburg, Virginia. I have been employed the last 17 years by the C&P Telephone Companies and Bell Atlantic. During this time I have had a variety of assignments of increasing responsibilities in the Engineering, Planning, Operations and Marketing organizations (including Engineer, Supervisor, Manager, District Manager and Director). My two most recent assignments were as Director of Customer Network Engineering for Maryland, Washington, West Virginia and Virginia, and as Director of Federal Programs.

Q3. **WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A3. **In my testimony, I describe what SBC-MV has revealed about how its proposed telephone system will work, and what significant technical issues remain in light of the limited information SBC-MV has provided.**

II. SBC-MV's Disclosures About its Proposed Network Leave Open a Number of Serious Technical Issues.

Q4. **HAVE YOU REVIEWED THE TESTIMONY PROVIDED BY SBC-MV IN THIS PROCEEDING RELATING TO THE TECHNICAL ASPECTS OF ITS PROPOSED TELEPHONE SYSTEM?**

A4. **Yes.**

Q5. **PLEASE SUMMARIZE THAT TESTIMONY.**

A5. **In his Direct Testimony, Mr. Reisner describes an upgrade from the existing coax "tree and branch" architecture to a "star" configured Hybrid Fiber Coax network. This network will transport signals originating at the system headend and switching office to fiber hub locations supporting 5,000 to 15,000 customer locations. These fiber hubs will in turn feed fiber nodes which support serving areas of 500 customer locations on average. Connections to each customer location will be provided via coax cable from the fiber node and will require an average of three "active devices" per coax route. The network will have backup powering to support fiber electronics and will be connected to a twenty four hour per day status monitoring system. Mr. Reisner also states that**

this network will not require a distribution frame due to the use of direct connections to a digital switch, and will utilize self-healing ring technology to enhance the reliability of fiber connections to each fiber hub.

Q6. HAS BA-MARYLAND INQUIRED ABOUT THE TECHNICAL CAPABILITIES OF THE SBC-MV SYSTEM?

A6. Yes. On August 30, 1994, BA-Maryland propounded 42 data requests to SBC-MV dealing with a wide variety of technical issues. (Copies of these Data Requests, and SBC-MV's responses, are attached as Exhibit A hereto.)

Q7. PLEASE DESCRIBE SBC-MV'S RESPONSES.

A7. While SBC-MV provided responses to a number of requests, in 16 instances SBC-MV could not answer because "The information will depend on the vendor selected to supply our network equipment."

Q8. DO YOU BELIEVE THAT SIGNIFICANT TECHNICAL ISSUES REMAIN UNCLEAR IN LIGHT OF SBC-MV'S RESPONSE?

A8. Yes. SBC-MV's inability to describe its system because it has yet to select a vendor for critical parts of its network leaves a number of important issues shrouded in mystery. For instance, in Data Request #13 BA-Maryland asked:

> "Is the telephony design non-blocking from both a transmission and switching perspective? If not,

what are the basic traffic engineering assumptions used in designing SBC-MV's network?"

This question goes to the very important issue of whether, and to what extent, dial tone delay and blocked calls would be experienced during peak calling periods. Although SBC-MV stated that its system will be designed "to meet or exceed the P.01 grade of service," SBC-MV was unable to describe how the network would handle traffic during peak calling hours because it had yet to choose a vendor for the transmission and switching portions of the network which perform traffic management functions.

Similarly, in Data Requests #32, #34, and #38 BA-Maryland sought information on the important issue of whether SBC-MV's telephone network would operate in the event of a normal commercial power outage, how long it would operate during a catastrophic failure or natural disaster, and the safety of the proposed powering arrangement. SBC-MV was unable to describe in any detail how power would be provided to the home and to crucial network components in the event of a commercial power outage because it had yet to select a vendor for the power distribution system.

Q9. WHY IS BA-MARYLAND CONCERNED ABOUT THE TECHNICAL CAPABILITIES OF THE SBC-MV SYSTEM?

A9. The October 17, 1994, edition of Telephony includes a report that Teleport, TCI and Motorola will, next March, begin the "first U.S.-based technical trial of telephony" over a traditional cable network. (emphasis added) (A copy of this report is attached as Exhibit B hereto.) If SBC-MV is permitted to provide service to Montgomery County residents, BA-Maryland's remaining customers will expect to continue to be able to reach their friends and neighbors in Montgomery County during busy times and when the power is out--just as they do now when those friends and neighbors are still served by BA-Maryland. This Commission should know if basic questions about SBC-MV's performance characteristics and levels of service provided to customers are unknown even as SBC-MV is seeking approval for its petition.

Q10. WILL YOU KNOW MORE ABOUT THE TECHNICAL ASPECTS OF SBC-MV'S NETWORK?

A10. Perhaps. BA-Maryland's Data Requests were of a continuing nature, so if SBC-MV were soon to select a vendor, or otherwise come to some conclusion on these important technical issues, I would expect that SBC-MV would supplement its answers to these data requests.

Q11. DOES THIS CONCLUDE YOU REBUTTAL TESTIMONY?

A11. Yes, at this time. Further testimony may be appropriate, however, if BA-Maryland receives additional information on these important technical issues from SBC-MV.

CASE NO. 8659
BELL ATLANTIC-MARYLAND, INC.
DATA REQUEST DATED AUGUST 30, 1994
TO
SBC MEDIA VENTURES, INC.

Note: All inquiries concerning this data request may be referred to Mark Armstrong, Director-External Affairs, (301) 294-7632.

1. (a) Regarding footnote 1 of Mr. Armstrong's August 3 testimony, how does SBC-MV plan on providing interexchange, intraLATA calling service to its customers? (b) Will SBC-MV customers be presubscribed to SBC-MV for their interexchange, intraLATA calling service?

Answer:

a) SBC-MV initially plans to deliver interexchange, IntraLATA calls destined to Bell Atlantic customers to the Bell Atlantic Access Tandem. However, options may exist to deliver these calls over direct trunk groups to the Bell Atlantic end office, or deliver these calls to a third party, e.g. IXC, for routing to the Bell Atlantic end office.

b) YES

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2. Does SBC-MV Plan to provide 911, Dual Party Relay, Operator and Directory Assistance services using only its own facilities?

Answer:

E911 Service:	SBC-MV tentatively plans to directly connect to the Montgomery County PSAP from its own 911 tandem switch. SBC-MV proposes to utilize the BA-Maryland Rockville 911 tandem for its backup route as required by the State of Maryland.
Dual Party Relay:	Yes, SBC-MV customers will have access to the Maryland Relay Service from SBC-MV facilities.
Operator Service:	SBC-MV has several options for providing Operator Services to its customers including, providing the services "in-house", possibly contracting with Bell Atlantic, or contracting with another third party operator services company. SBC-MV has not made any final decisions regarding Operator Service.
Directory Assistance Service:	SBC-MV has several options for providing Directory Assistance Services to its customers including, providing the services "in-house", possibly contracting with Bell Atlantic, or contracting with another third party directory assistance services company. SBC-MV has not made any final decisions regarding Directory Assistance Service.

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3. Reference is made to pages 9 and 10 of Mr. Armstrong's August 3 testimony.
   (a) Please provide any analysis or studies in support of the preliminary approach of establishing four exchanges in Montgomery County.
   (b) Please describe how each of the factors listed on page 10 was taken into account.
   (c) Please describe how establishing four exchanges meets the objective: "to minimize customer confusion."

Answer:

a) No formal analyses or studies were conducted. The preliminary approach of establishing four exchanges came about via discussions and meetings among SBC-MV employees.

b) (i) possible interconnection rates: The effects of the rate design and rate level ordered in Case No. 8584/I were discussed.

(ii) placement of distribution plant: We discussed the planned layout of our network to see if it assisted in defining our exchanges.

(iii) communities of interest: Using BA-Maryland's exchanges and census tract maps we looked for communities of interest that existed and that should be considered in our exchange layout.

(iv) existing BA-Maryland calling scopes: Knowing that we had to offer potential customers at least the calling scopes they would have as BA-Maryland customers, BA-Maryland's calling scopes were considered.

(v) the impact our exchanges and calling scopes would have on BA-Maryland customers in surrounding areas: An objective was to minimize customer confusion for both SBC-MV customers and BA-Maryland customers. To the extent possible, we included the impact on all customers' calling scopes in our discussions.

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Question No. 3 (Cont.)

c) Having four exchanges retains a certain amount of the current geographic orientation of BA-Maryland's network. Accordingly, customers will still be able to associate an NXX with a geographic location. Four exchanges and their respective calling scopes (as preliminarily proposed) creates less of a change for customers to adapt to when they subscribe to SBC-MV's service.